PRACTICE PAPER-2

CLASS: XII

SUBJECT : BIOLOGY

Time Allowed : 3 hours **Maximum Marks : 70**

General Instructions :

(1) The question paper has five sections and 33 questions. All questions are compulsory.

(2) Section – A has 16 questions of 1 mark each
Section – B has 5 questions of 2 marks each
Section – C has 7 questions of 3 marks each
Section – D has 2 case-based questions of 4 marks each
Section – E has 3 questions of 5 marks each.

(3) There is no overall choice. However, internal choices have been provided in some questions. Student has to attempt only one of the alternatives in such questions.

(4) Wherever necessary, neat and properly labelled diagrams should be drawn.

SECTION – A

1. The phenomenon where in the ovary develops into a fruit without fertilisation is called **[1]**

(a) Parthenocarpy (b) Apomixis
(c) Asexual reproduction (d) Sexual reproduction

2. The transfer of zygote or early embryo (up to 8 blastomere) into fallopian tube is **[1]**

(a) IVF and ET (b) ZIFT (c) GIFT (d) IUT

3. Dihybrid cross proves the law of :- **[1]**

(a) Segregation (b) Purity of gametes
(c) Dominance (d) Independent assortment

4. Plasmodium enters the human body as :- **[1]**

(a) Female Anopheles mosquito (b) Sporozoite
(c) Trophozoite (d) Haemozoin

5. Cannabis sativa (Hemp) yields:- **[1]**

(a)Bhang (b) Charas (c) Ganja (d) All of the above

6. A nucleoside differs from a nucleotide because it lacks the **[1]**

(a) N-Base (b) Sugar (c) Phosphate group (d) Hydroxyl group

7. *Saccharomyces cerevisiae* is employed in production of **[1]**

(a) idli (b) beer (c) bread (d) All of the above

8. The protein products of the Bt toxin genes cryIAc and cryIIAb are responsible for controlling:- **[1]**

(a) Bollworm (b) Roundworm (c) Moth (d) Fruit fly

9. Which of the following is called the lungs of the planet? **[1]**

(a) Tropical rain forest (b) Thar desert

(c) Amazon rain forest (d) Temperate deciduous forest

10. How does seasonal variations take place on earth? **[1]**

(a) Rotation on its own axis (b) Rotation around sun

(c) Rotation of moon around earth (d) Both (a) and (b)

11. Match the item in column-A with those in column-B **[1]**

Column - A		**Column - B**	
(a)	Herbivores plants	**(i)**	Commensalism
(b)	Mycorrhiza plants	**(ii)**	Mutualism
(c)	Sheep Cattle	**(iii)**	Predation
(d)	Orchid tree	**(iv)**	Competition

Select the correct option from following

(a) a - (iv), b - (ii), c - (i), d - (iii) (b) a - (iii), b - (ii), c - (iv), d - (i)

(c) a - (ii), b - (i), c - (iii), d - (iv) (d) a - (i), b - (iii), c - (iv), d - (ii)

12. In Rivet Popper hypothesis, what do you mean by rivets? **[1]**

(a) Species (b) Ecosystem (c) Biodiversity (d) Biosphere

13. **Assertion (A):** In angiosperms, the male gametophyte is the pollen grain. **[1]**

Reason (R) : Pollen grain contains stigma, style and ovary.

(a) Both A and R are true and R is the correct explanation of A

(b) Both A and R are true and R is not the correct explanation of A

(c) A is true but R is false.

(d) A is false but R is true.

14. **Assertion (A) :** Histones are basic in nature. **[1]**

Reason (R) : Histones are rich in the amino acids lysine and arginine.

(a) Both A and R are true and R is the correct explanation of A

(b) Both A and R are true and R is not the correct explanation of A

(c) A is true but R is false.

(d) A is false but R is true.

15. **Assertion (A):** Syphilis, gonorrhea and AIDS are STIs. **[1]**

Reason (R) : These diseases are transmitted through sexual intercourse.

(a) Both A and R are true and R is the correct explanation of A

(b) Both A and R are true and R is not the correct explanation of A

(c) A is true but R is false.

(d) A is false but R is true.

16. **Assertion (A) :** The conversion of productivity at next trophic level is 10%. **[1]**

Reason (R) : Energy is lost in the respiration process.

(a) Both A and R are true and R is the correct explanation of A

(b) Both A and R are true and R is not the correct explanation of A

(c) A is true but R is false.

(d) A is false but R is true.

SECTION – B

17. The following is the illustration of the sequence of ovarian events (a – i) in a human female. **[2]**

(a) (b) (c) (d) (e) (f) (g) (h) (e)

(a) Identify the figure that illustrates ovulation and mention the stage of oogenesis it represents.

(b) Name the ovarian hormone and the pituitary hormone that have caused the above mentioned event.

18. Name a human genetic disorder due to the following: **[2]**

(a) An additional X-chromosome in a male

(b) Deletion of one X-chromosome in a female

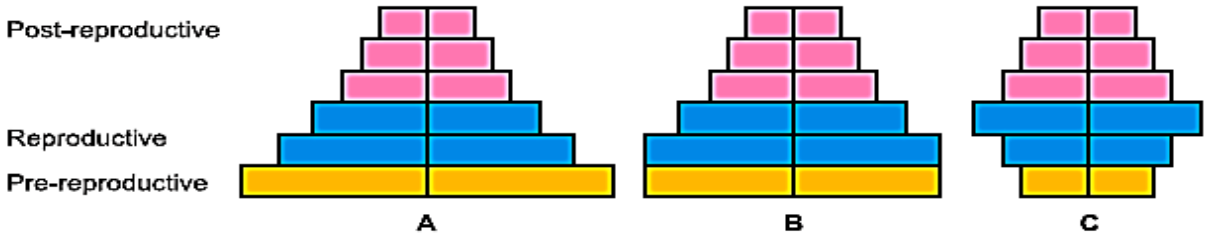
19. (a) Name the source plant of heroin drugs.

(b) Write the effects of heroin on the human body. **[2]**

20. (a) Mention the difference in the mode of action of exonuclease and endonuclease.

(b) How does restriction endonuclease function? **[2]**

21. Study the three different age pyramids for human population given below and answer the questions that follow :



(i) Write the names given to each of these age pyramids.

(ii) Mention the one which is ideal for human population and why.

OR

(a) What is a trophic level in an ecosystem?

(b) Explain the role of the 'first trophic level' in an ecosystem. **[2]**

SECTION – C

22. Where are the following structures present in a male gametophyte of an angiosperm? Mention the function of each one of them. **[3]**

(a) Sporopollenin

(b) Generative cell

23. Draw a diagram of a mature human sperm. Label any two parts and write their functions. **[3]**

24.

Study the mRNA segment given above which is complete to be translated into a polypeptide chain.

(i) Write the codons 'a' and 'b'.

(ii) What do they code for?

(iii) What is aminoacylation? **[3]**

25. *Rearrange Ramapithecus, Australopithecus and Homo habilis* in the order of their evolution on the Earth. Comment on their evolutionary characteristics. **[3]**

26. Study the figure of ringworm affected area of the skin given below :-

(a) Name any two causative organisms responsible for ringworm.

(b) State any two symptoms of the disease.

OR

(i) Write the scientific names of the two species of filarial worms causing filariasis.

(ii) How do they affect the body of infected person?

(iii) How does the disease spread? **[3]**

27. Mukesh was doing gel electrophoresis to purify DNA fragments. Given below is the sketch of the observations of the experiment performed by him.

(a) At which end he would have loaded the samples and where?

(b) Analyse the reason for different positions taken up by the DNA bands.

(c) Elaborate the step he would have followed to visualise DNA bands.

[3]

28. Name the type of interaction seen in each of the following examples :

(i) *Ascaris* worms living in the intestine of human.

(ii) Wasp pollinating fig inflorescence.

(iii) Clown fish living among the tentacles of sea anemone. **[3]**

SECTION – D

Question 29 and 30 are case based questions. Each question has subparts with internal choice in one subpart.

29. Read the following passage and answer the given questions.

AIDS is considered as a 'syndrome' rather as a disease. It is so because AIDS causing virus (HIV) enters the body of a healthy person generally through sexual organs or through blood transfusion. It damages body's Immune system and therefore, body no longer is able to fight off minor infections. Thus, there are no specific disease symptoms for AIDS and the patient develops complex diseases and symptoms.

(a) What are the common symptoms of AIDS?

(b) Mention two diseases that spread through sexual contact.

(c) Name any three preventive measures of AIDS disease.

OR

(c) How AIDS can be diagnosed? **[4]**

30. Read the following passage and answer the given questions.

Sutton, who was American, studied chromosomes and meiosis in grasshoppers. Boveri, who was German, studied the same things in sea urchins. In 1902 and 1903, Sutton and Boveri published independent papers proposing Chromosomal Theory of Inheritance. They state that genes are found at specific locations on chromosomes and the behaviour of chromosomes during meiosis can explain Mendel's law of inheritance. T.H. Morgan, worked with tiny fruit flies, *Drosophila melanogaster* and provided the first strong confirmation of the chromosomal theory. He concluded that the eye color gene must be located on the X-chromosome.

(a) Name the stage of cell division where segregation of an independent pair of chromosomes occurs.

(b) Is it true with respect to chromosomal theory of inheritance that both chromosomes as well as genes segregate at the time of gamete formation such that complete pair is transmitted to gamete?

(c) What does the chromosomal theory of inheritance?

OR

(c) Why did Morgan prefer to work with fruit-flies for his experiments? State any three reasons. **[4]**

SECTION – E

31. Name the hormone secrete(d)

(i) (a) By corpus luteum and placenta (any two).

(b) During follicular phase and parturition.

(ii) Name the stages in a human female where.

(a) Corpus luteum and placenta co-exist.

(b) Corpus luteum temporarily ceases to exist.

OR

What is spermatogenesis? Briefly describe the process of spermatogenesis? **[5]**

32. In malarial patient, the rupture of RBCs is associated with the release of toxic substance, haemozoin which is responsible for the chill and high fever recurring every three to four days.

(a) Give the scientific name of the parasite the causes malignant malaria in humans.

(b) At what stage does the parasite enter in the human body?

(c) Trace its life cycle in human body.

OR

(a) Name the enzyme that catalyses the transcription of hnRN(a)

(b) Draw a labelled schematic structure of a transcription unit. Explain the function of each component in the unit in the process of transcription. **[5]**

33. Read the following passage and answer the given questions.

Insulin used for diabetes was earlier extracted from pancreas of slaughtered cattle and pigs. Insulin from an animal source, though caused some patients to develop allergy or other types of reactions to the foreign protein. Insulin consists of two short polypeptide chains: chain A and chain B, that are linked together by a type of bridge. A company prepared two DNA sequences corresponding to A and B, chains of human insulin and introduced them in plasmids of E. coli to produce insulin chains. Chains A and B were produced separately, extracted and combined to form human insulin.

(a) Name the company who formed first genetic engineered insulin?

(b) What is difference between pro-insulin and insulin?

(c) Insulin can be orally administered to diabetic people or not. Why?

(d) Which of the host organism used for production of genetic engineered insulin?

(e) How are two short polypeptide chains of insulin linked together?

OR

The first clinical gene therapy was given in 1990 to a 4-year old girl with adenosine deaminase (ADA) deficiency. As a first step towards gene therapy, lymphocytes from the blood of the patient are grown in a culture outside the body. A functional ADA cDNA (using a retroviral vector) is then introduced into these lymphocytes, which are subsequently returned to the patient. However, as these cells are not immortal, the patient requires periodic infusion of such genetically engineered lymphocytes. However, if the gene isolate from marrow cells producing ADA is introduced into cells at early embryonic stages, it could be a permanent cure.

(a) Write the name of disease which caused due to deficiency of enzyme adenosine deaminase.

(b) Mention a possible permanent cure for a ADA deficiency patient.

(c) What is gene therapy?

(d) Why do children cured by enzyme-replacement therapy for ADA deficiency need periodic treatment. **[5]**